Effects of Chicken Manure and Mineral Fertilizer (NPK) on Plant Grown in Lead Contaminated Soil

Khan, Amir

Khan, Ali

Karim, Kiran

Soil pollution as a result of toxic metals is one of the severe harms of the environment. These toxic metals are non-biodegradable and toxic to plants at high levels. Among the existing heavy metal pollutants, lead (Pb) is the major contaminant of the soil. Significant increase in the Pb content of cultivated soil is observed near industrial areas. The soil with heavy metal contamination, Pb in particular, enhances the Pb uptake and causes their accumulation in different plants parts which effect plant growth. Soil improvement is a major requirement for the successful establishment of vegetation especially in metal-contaminated soils. For present investigation contaminated soil was collected from Karachi industrial region and was mixed with chicken manure and mineral fertilizer (NPK). Healthy seeds were sown in plastic pots containing Pb contaminated soil which was mixed with chicken manure and mineral fertilizer. Soil without mineral fertilizer and chicken manure served as the control. Plant growth and Root/shoot ratio is an indicator of environmental stress. The higher plant biomass and root/shoot ratio was observed in pots treated with chicken manure and mineral fertilizer (NPK). It was also observed that lead accumulation were reduces in plants grown in amended soil.The present study demonstrated that the application of chicken manure and NPK were proved very effective in improving growth, biomass and root/shoot ratio of Vigna radiata grown in lead contaminated soil. These results suggested that Chicken manure and NPK amendment could provide enough nutrients for the growth of Vigna radiata in lead contaminated soil and may improve their physical conditions. In summary, Vigna radiata well suited for PHYTOSTABILIZATION in the lead contaminated areas.

Awards Won: